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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
LABORATORY SERVICES PROGRAM

JUL 12 1985

Special Request Sampling Report
Dugan-Helterbrand Company
Marshfield, Missouri
April 25, 1985

INTRODUCTION

At the request of the Waste Management Program sampling was conducted at Dugan-Helterbrand Company in Marshfield, Missouri by C. Dean Martin of the Laboratory Services Program on April 25, 1985. Also present during sampling were Chuck Kroeger and Greg Perkins of the Springfield Regional Office and Joe Helterbrand of Dugan-Helterbrand.

A sample taken earlier by Sam Brenneke of the Laboratory Services Program at the Webster County Landfill indicated that the Dugan-Helterbrand waste stream might have high levels of cyanide (2136 ug/g).

METHODS

All samples were collected with stainless-steel spoons and placed in glass jars with teflon-lined lids.

The samples were split into three parts. One third of each sample was given to Joe Helterbrand, one third was retained by the Laboratory Services Program for silver analysis (Toxics Extraction Procedure) and one third of each sample was sent to a contract laboratory (Environmental Analysis, Inc.) for cyanide analysis.

All samples were analyzed in accordance with methods prescribed in 10 CSR 25-4.010, Hazardous Waste Identification.

OBSERVATIONS

At the plant Mr. Helterbrand discussed the process used and then gave a tour of the Dugan-Helterbrand facility. Used photographic film is first shredded into small chips, placed into a large vat and subject to a series of solutions and rinses within the vat. In the process silver is solubilized and then electric plated out of solution. Chlorination of the cyanide bath is used to destroy the cyanide. After chlorination the film chips are removed from the reaction vat and placed into dumpsters (~50 ft.^{3} capacity each) filling eight to ten of the dumpsters. The film chips in the dumpster are then disposed of at the Webster County Landfill. The process is staggered so that one batch (or vat) is ready for disposal daily.

OBSERVATIONS (cont.)

The following samples were collected:

85-1400 Photographic chips from the dumpsters. A composite of chips collected from all the dumpsters containing end-of-process waste chips. This composite represented one batch. The chips were collected from about 10 cm below the top of the chips.

85-1401 Photographic chips from a vat after chlorination. This sample represents a batch treated for cyanide destruction.

85-1402 Photographic chips prior to chlorination. This was a sample from a batch prior to treatment for cyanide destruction.

RESULTS*

Sample Number	Cyanide ug/g	Silver TEP (Toxics Extraction Procedure) ug/l
84-1400	1010	2800
84-1401	1370	<2500
84-1402	2338	<2500

* See attached reports.

DISCUSSION & CONCLUSIONS

The samples collected indicate incomplete cyanide destruction by the chlorination process used at this facility. Improvements in monitoring and controlling the processes at this plant might result in improved treatment, less cost and better silver recovery.

The Dugan-Helterbrand Company should consult with experts in this field to find ways to improve their cyanide treatment. The Waste Management Program will review the sample results and determine what levels of cyanide in this waste can be landfilled.

Mr. Helterbrand was helpful and cooperative throughout the course of the inspection on April 25, 1985.

April 25, 1985
July 8, 1985

Submitted by

C. Dean Martin
Environmental Emergency Response Coordinator
Field Services Section
Laboratory Services Program

Date: July 8, 1985

Approved by

James H. Long
Director
Laboratory Services Program

CDM:mjs

cc: Mr. John Nixon, Regional Administrator, Springfield Regional Office
Mr. David Bedan, Staff Director, Waste Management Program

[redacted]

Sample No. 85-1400

Reported to: C. DEAN MARTIN
Affiliation: EER

Date: 5/03/85
Project Code: 533

Sample Description:
DUGAN, HELTERBRAND PHOTO CHIPS FROM DUMPSTER.

Collected by: C. DEAN MARTIN
Affiliation: EER
Remarks: CONTAINS CYANIDE.

Date: 04/25/85

PARAMETERS	RESULTS
CYANIDE	1010 UG/G
COMMENTS : ANALYZED BY ENV. ANALYSIS, INC.	
TEP SILVER	2800 UG/L

The analysis of this sample was performed in accordance with procedures as outlined in the latest edition of Standard Methods for the Examination of Water and Wastewater, EPA Manual of Methods for Chemical Analysis of Water and Wastes, and/or Annual Book of ASTM Standards.

James H. Long, Director
Laboratory Services Program
Division of Environmental Quality

cc: Joe Davis, WMP

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John D. Ashcroft, Governor

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Sample No. 85-1401

Reported to: C. DEAN MARTIN
Affiliation: EER

Date: 5/03/85
Project Code: 533

Sample Description:
DUGAN HELTERBRAND - PHOTO CHIPS FROM TANK AFTER CHLORINATION.

Collected by: C. DEAN MARTIN
Affiliation: EER
Remarks: CONTAINS CYANIDE

Date: 04/25/85

PARAMETERS	RESULTS
CYANIDE	1370 UG/G
COMMENTS : ANALYZED BY ENV. ANALYSIS, INC.	
TEP SILVER	<2500 UG/L

The analysis of this sample was performed in accordance with procedures as outlined in the latest edition of Standard Methods for the Examination of Water and Wastewater, EPA Manual of Methods for Chemical Analysis of Water and Wastes, and/or Annual Book of ASTM Standards.

James H. Long, Director
Laboratory Services Program
Division of Environmental Quality

cc: Joe Davis, WMP

John D. Ashcroft Governor

RESULT OF SAMPLE ANALYSIS

Sample No. 85-1402

Reported to: C. DEAN MARTIN
Affiliation: EER

Date: 5/03/85
Project Code: 533

Sample Description:
DUGAN HELTERBRAND - PHOTO CHIPS PRIOR TO CHLORINATION.

Collected by: C. DEAN MARTIN
Affiliation: EER
Remarks: CONTAINS HIGH LEVEL OF CYANIDE.

Date: 04/25/85

PARAMETERS	RESULTS
CYANIDE	2338 UG/G
COMMENTS : ANALYZED BY ENV. ANALYSIS, INC.	
TEP SILVER	<2500 UG/L

The analysis of this sample was performed in accordance with procedures as outlined in the latest edition of Standard Methods for the Examination of Water and Wastewater, EPA Manual of Methods for Chemical Analysis of Water and Wastes, and/or Annual Book of ASTM Standards.

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